

What is claimed is:

1. A color image forming apparatus, comprising:

a first image forming device including a first scanning optical device to form a first image and a first developing device to develop the first image into a first color toner image; and

a second image forming device including a second scanning optical device to form a second image and a second developing device to develop the second image into a second color toner image;

each of the first and second optical devices comprising:

a light source which emits a light beam;

a deflector which deflects the light beam so as to scan an image forming surface in a main scanning direction with the light beam;

a plurality of lenses provided between the deflector and the image forming surface to focus the deflected light on the image forming surface, wherein each of the plurality of lenses has a length along the main scanning direction; and

a lens positioning device to position at least one lens of the plurality of lenses rotatably around an axis parallel to the length of the one lens to adjust the characteristic of a scan line image in an adjustment process,

wherein the characteristic of the first scan line image and the characteristic of the second scan line image substantially become the same, when at least one of the lens

is rotated around the axis parallel to the length of the lens.

2. The apparatus of claim 1, wherein the deflector includes a polygon mirror.

3. The apparatus of claim 1, further comprising:  
third and fourth image forming devices including  
respective scanning optical devices and respective developing  
devices, wherein each of the scanning optical devices  
5 comprises the light source, the deflector, the plurality of  
lenses, and the lens positioning device.

4. The apparatus of claim 1, wherein one of the plurality of lenses is a f. lens.

5. The apparatus of claim 1, wherein one lens of the plurality of lenses is a cylindrical lens.

6. The apparatus of claim 1, wherein the plurality of lenses comprise a f. lens and a cylindrical lens.

7. The apparatus of claim 6, wherein the positioning device allows the cylindrical lens being rotatable around an axis parallel to the length of the cylindrical lens so as to

scan a straight line on the image forming surface.

8. The apparatus of Claim 6, wherein the positioning device of each of the first scanning device and the second scanning device comprises two mechanisms to allow the f. lens and the cylindrical lens being rotatable around an axis parallel to the length of each lens respectively so that the deflected light scans a straight line on the image forming surface.

9. The apparatus of claim 1, wherein the one lens is positioned closest to the image forming surface among the plurality of lenses.

10. The apparatus of claim 1, wherein the characteristic of the image is a straight line.

11. The apparatus of claim 1, further comprising:  
an adjustment device adjusting at least one of the first and second scanning optical devices so that the scanned images formed by the first and second image forming devices are superposed on a recording sheet.

12. The apparatus of claim 3, further comprising:  
an adjustment device adjusting at least one of the first,

second, third and fourth scanning optical devices so that the scanned images formed by the first, second, third and fourth scanning optical device [and the image of the second one] are superposed on a recording sheet.

13. The apparatus of claim 1, wherein the image forming surface is a surface of a common image bearing member.

14. The apparatus of claim 1, wherein the positioning device of each of the first and second optical devices allows the respective one lens being rotatable so as to make deviations between the respective line image and the desired line smaller than 200 m.

15. The apparatus of claim 14, wherein the deviations are made smaller than 120 m.

16. The apparatus of claim 1, wherein the positioning device of each of the first and second optical device allows the respective one lens being rotatable so as to make the respective line image to become a desired line.

17. The apparatus of claim 1, wherein each of the first and second images is a line image and the characteristic of

the image is the shape of the line image.

18. A scanning optical system for use in a color image forming apparatus comprising:

first and second scanning optical devices scanning in a main scanning direction with a light beam so that each of the devices form an image on an image forming surface, each of the first and second scanning optical devices comprising:

a light source which emits a light beam;

a deflector which deflects the light beam in the main scanning direction;

a plurality of lenses, provided between the deflector and the image forming surface, which focus the deflected light beam on the image forming surface, wherein each of the lenses has a length along the main scanning direction; and

a lens positioning device to position at least one lens of the plurality of lenses rotatably around an axis parallel to the length of the one lens to adjust the characteristic of a scan line image in an adjustment process,

wherein the characteristic of the first scan line image and the characteristic of the second scan line image substantially become the same, when at least one of the lens is rotated around the axis parallel to the length of the lens.

19. The apparatus of claim 18, wherein the deflector includes a polygon mirror.

20. The apparatus of claim 18, further comprising:  
third and fourth scanning optical devices, each of the  
third and fourth scanning optical devices comprising the light  
source, the deflector, the plurality of lenses, and  
positioning device.

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21. The apparatus of claim 18, wherein one of the plurality of lenses is a f. lens.

22. The apparatus of claim 18, wherein one of the plurality of lenses is a cylindrical lens.

23. The apparatus of claim 18, wherein the plurality of lenses comprise a f. lens and a cylindrical lens.

24. The apparatus of claim 23, wherein the positioning device allows the cylindrical lens being rotatable around an axis parallel to the length of the cylindrical lens so as to scan a straight line on the image forming surface.

25. The apparatus of Claim 23, wherein the positioning device of each of the first scanning device and the second scanning device comprises two mechanisms to allow the f. lens and the cylindrical lens being rotatable around an axis parallel to the length of each lens respectively so that the deflected light scans a straight line on the image forming surface.

26. The apparatus of claim 18, wherein the one lens is positioned closest to the image forming surface among the plurality of lenses.

27. The apparatus of claim 18, wherein the characteristic of the scan line is a straight line.

28. The apparatus of claim 18, further comprising:  
an adjustment device adjusting at least one of the first and second scanning optical devices so that the scanned images formed by the first and second scanning optical devices are superposed on the recording sheet.

29. The apparatus of claim 20, further comprising:  
an adjustment device adjusting at least one of the first, second, third and fourth scanning optical devices so that the scanned images formed by the first, second, third and fourth

scanning optical devices are superposed on the recording sheet.

30. The apparatus of claim 18, wherein the image forming surface is a surface of a common image bearing member.

31. The apparatus of claim 18, wherein the positioning device of each of the first and second optical devices allows the respective one lens being rotatable so as to make deviations between the respective line image and the desired line smaller than 200 m.

32. The apparatus of Claim 31, wherein the deviations are made smaller than 120 m.

33. The apparatus of claim 18, wherein the positioning device of each of the first and second optical device allows the respective one lens being rotatable so as to make the respective line image to become a desired line.

34. The apparatus of claim 18, wherein each of the first and second images is a line image and the characteristic of the image is the shape of the line image.



35. A color image forming apparatus including a developing device for color toner image, comprising:

first and second scanning optical devices scanning in a main scanning direction with a light beam so that each of the devices form an image on an image forming surface, each of the first and second scanning optical devices comprising:

a light source which emits a light beam;

a deflector which deflects the light beam in the main scanning direction;

a plurality of lenses, provided between the deflector and the image forming surface, which focus the deflected light beam on the image forming surface, wherein each of the lenses has a length along the main scanning direction; and

a lens positioning device to position at least one lens of the plurality of lenses rotatably around an axis parallel to the length of the one lens to adjust the characteristic of a scan line image in an adjustment process,

wherein the characteristic of the first scan line image and the characteristic of the second scan line image substantially become the same, when at least one of the lens is rotated around the axis parallel to the length of the lens.

36. The apparatus of claim 35, wherein the deflector includes a polygon mirror.

37. The apparatus of claim 35, further comprising:

third and fourth scanning optical devices, each of the  
third and fourth scanning optical devices comprising the light  
source, the deflector, the plurality of lenses, and  
positioning device.

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38. The apparatus of claim 35, wherein one of the  
plurality of lenses is a f. lens.

39. The apparatus of claim 35, wherein one of the  
plurality of lenses is a cylindrical lens.

40. The apparatus of claim 35, wherein the plurality of  
lenses comprise a f. lens and a cylindrical lens.

41. The apparatus of claim 40, wherein the positioning  
device allows the cylindrical lens being rotatable around an  
axis parallel to the length of the cylindrical lens so as to  
scan a straight line on the image forming surface.

42. The apparatus of Claim 40, wherein the positioning  
device of each of the first scanning device and the second  
scanning device comprises two mechanisms to allow the f. lens  
and the cylindrical lens being rotatable around an axis

5 parallel to the length of each lens respectively so that the deflected light scans a straight line on the image forming surface.

43. The apparatus of claim 35, wherein the one lens is positioned closest to the image forming surface among the plurality of lenses.

44. The apparatus of claim 35, wherein the characteristic of the scan line is a straight line.

45. The apparatus of claim 35, further comprising:

an adjustment device adjusting at least one of the first and second scanning optical devices so that the scanned images formed by the first and second scanning optical devices are  
5 superposed on the recording sheet.

46. The apparatus of claim 37, further comprising:

an adjustment device adjusting at least one of the first, second, third and fourth scanning optical devices so that the scanned images formed by the first, second, third and fourth  
5 scanning optical devices are superposed on the recording sheet.

47. The apparatus of claim 35, wherein the image forming surface is a surface of a common image bearing member.

48. The apparatus of claim 35, wherein the positioning device of each of the first and second optical devices allows the respective one lens being rotatable so as to make deviations between the respective line image and the desired  
5 line smaller than 200  $\mu$ m.

49. The apparatus of Claim 48, wherein the deviations are made smaller than 120  $\mu$ m.

50. The apparatus of claim 35, wherein the positioning device of each of the first and second optical device allows the respective one lens being rotatable so as to make the respective line image to become a desired line.

51. The apparatus of claim 35, wherein each of the first and second images is a line image and the characteristic of the image is the shape of the line image.